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I, JANENE PEISKER, TEAM LEADER EXAMINATION SUPPORT AND SALES hereby certify that annexed is a true copy of the Provisional specification in connection with Application No. 2004905709 for a patent by RNC GLOBAL PROJECTS as filed on 01 October 2004.

WITNESS my hand this
Second day of February 2005

JANENE PEISKER
TEAM LEADER EXAMINATION
SUPPORT AND SALES

P/00/009
Regulation 3.2

AUSTRALIA

Patents Act 1990

PROVISIONAL SPECIFICATION

Invention Title: **A project management method and system**

The invention is described in the following statement:

A project management method and system

Field of the invention

The invention relates to a method and system for assisting in the management of projects. The specification incorporates further aspects of the invention described in co-pending provisional Australian Application 2004900269, the contents of which are hereby entirely incorporated by reference into the current specification.

Background of the invention

Over the years, various systems, methods and tools have been used in project management across various sectors including engineering, construction, and, more recently, in IT and corporate and government organizations.

One of the main problems associated with project management is the relatively high failure rate of projects. Recent estimates of the failure rate for projects in the corporate, government and IT sectors have varied between 75 per cent and 83 per cent. This is despite a significant body of knowledge in the area of project management having been developed over the years. Gantt charts have become the default standard layout for assisting in project management in these areas.

Whilst a Gantt chart and associated project management software such as Microsoft Project® and Primavera provide a fairly clear visual indication of each main task, its duration, its interdependency and the applicable resource set or team which needs to be applied to each task, the inventor has concluded that the relatively high recorded failure rate is indicative of systemic problems existing in the area of project management and of possible shortcomings in the conventional Gantt chart and underlying project management software as the primary project management tools.

Summary of the invention

One aspect of the invention broadly provides a method of facilitating the computer-based management of a project having a series of tasks or events with a series of attributes associated with the tasks or events, the attributes including time-based attributes indicating the timing of the tasks or events, and resource based attributes indicating at least the resource allocated to the tasks or events, the method including

arranging the project in a resource-centric format, in which each resource is listed with all of its associated tasks and time-based attributes.

In a further aspect of the invention there is provided a computer-based method of facilitating the management of a project, having a series of tasks, said method comprising:

receiving a project management dataset including task data, associated resource data and associated timing data,

for each resource, grouping all corresponding task and timing data,

graphically representing said grouped data from a resource-centric perspective so that for each resource, the task and timing data is collectively displayed relative to said resource in a one-to-many relationship.

In yet another aspect of the present invention there is provided a computer-based method of facilitating the management of a project having a series of tasks or events, said method comprising:

receiving task data, associated resource data, associated timing data and associated task-related dependency data,

for each resource, grouping all corresponding task, timing and task-related dependency data,

graphically representing said grouped data from a resource-centric perspective so that for each resource the task, timing and task-related dependency data is collectively displayed relative to said resource in a one-to-many relationship.

Preferably, the resource is a human resource, but may include any other non-human resources associated with a project including facilities, equipment, supplies, premises and costs associated therewith.

Preferably, all corresponding task, time and task-related dependency data is grouped for each resource as a subset of each resource.

Conveniently, said task data is represented as a series of tasks, and said task-related dependency data is represented as a series of incoming and outgoing dependency

links, each incoming link originating from a third party task on which a particular task depends and each outgoing link being directed to a third party task which depends on said particular task.

The graphical representation is conveniently in a Gantt-chart type format, with each resource and associated task and timing data being row-specific.

In still a further aspect of the invention, there is provided a computer-based method of facilitating the management of multiple projects, each project having a series of tasks, said method comprising:

receiving a plurality of project management datasets, each dataset including project data, task data, associated resource data and associated timing data,

for each resource, grouping all corresponding task and timing data,

graphically representing said grouped data from a resource-centric perspective so that for each resource, the project, task and timing data is collectively displayed in a one-to-many relationship relative to said resource.

In a preferred form of the invention, the method includes, at a resource-centric level, enabling individual tasks to be re-allocated to other resources, typically via a 'drag and drop' interface.

Preferably, the method also includes enabling said resource-centric project management dataset to be alternately displayed in a task-centric format, where for each task the resource and timing data is collectively displayed.

The invention extends to a system for carrying out any of the above methods.

In particular, in another aspect of the present invention there is provided a system for facilitating the computer-based management of a project, having a series of tasks, said system comprising:

a data store for storing a project management dataset, said project management dataset including task data, resource data and timing data;

a task-based project management application which is arranged to access said data store, and to allow the graphical display and manipulation of said dataset in a task-

centric manner, in which said application graphically displays the associated data for each task,

a resource-based project management application which is arranged to access said data store, and which groups for each resource all corresponding task and timing data in a resource-centric manner, so each resource is linked with its task and timing data in a one to many relationship, and.

a graphical representation means for graphically representing said resource-centric data such that each resource is linked with its tasks, timing and dependency data in a one-to- many relationship.

In another aspect of the present invention there is provided a system for facilitating the computer-based management of a project having a series of tasks, said system comprising:

a project management application which stores a series of data on tasks in a first data store, each task having associated resource, timing and dependency data, said application graphically displaying data associated with each task in a task-centric format,

a function integrated within the project management application which is able to access the said first data store, and which aggregates data associated with each resource and stores it in a second data store, so that each resource is linked with its task, timing and dependency data in a one-to-many relationship,

a graphical representation means adapted to generate a graphical representation of either the first or second data stores, and

a means for switching between graphical representations of the task-centric or resource-centric views.

In a system for facilitating the computer-based management of a project having a series of tasks, said system comprising a data store for storing a project management dataset, said project management dataset including task data, resource data and timing data, and

a task-based project management application which is arranged to access said data store, and to allow the graphical display and manipulation of said dataset in a task-

2004905709 01 Oct 2004

centric manner, in which said application graphically displays the associated data for each task,

a further aspect of the invention provides:

a resource-based project management application which is arranged to access said data store, and which is arranged to group for each resource all corresponding task and timing data in a resource-centric manner, so each resource is linked with its task and timing data in a one to many relationship, said application including or interfacing with a graphical representation means for graphically representing said resource-centric data such that each resource is linked with its tasks, timing and dependency data in a one-to-many relationship.

In another aspect of the present invention there is provided a system for facilitating the computer-based management of a project, having a series of tasks, said system comprising:

means for storing a project management dataset, said project management dataset including task data, resource data and timing data;

means for accessing said dataset, graphically displaying the associated data for each task and manipulating said dataset in a task-centric manner,

means for accessing and reorganising and/or updating said dataset, said reorganising and/or updating including grouping task and timing data in a resource-centric manner, so each resource is linked with its task and timing data in a one to many relationship,

means for graphically representing said resource-centric data such that each resource is linked with its task, timing and dependency data in a one-to- many relationship.

Preferably, the system also includes means for enabling said resource-centric project management dataset to be alternately displayed in a task-centric format, where for each task the resource and timing data is collectively displayed and vice versa.

2004905709 01 Oct 2004

In still a further aspect of the invention, there is provided a system for facilitating the computer-based management of multiple projects, each project having a series of tasks, said system comprising:

a plurality of data stores for storing a plurality of project management datasets, each dataset including project data, task data, associated resource data and associated timing data,

a resource-based project management application which is arranged to access said plurality of data stores, and which groups for each resource all corresponding task and timing data in a resource-centric manner, so each resource is linked with its task and timing data in a one-to-many relationship,

a graphical representation means for graphically representing said resource-centric data such that for each resource, project, task and timing data for that resource across each project is collectively displayed in a one-to- many relationship relative to said resource.

In another aspect of the present invention there is provided computer readable media containing program code, the program code being operative to instruct at least one programmable processor to execute the project management methods of the present invention. In still another aspect of the present invention there is provided computer readable media containing program code, the program code being operative to instruct at least one programmable processor to execute a resource-based project management application which is arranged to access a data store associated with a project, and which groups for each resource in that project all corresponding task and timing data in a resource-centric manner, so each resource is linked with its task and timing data in a one-to-many relationship,

said application including or interfacing with

program code capable of graphically representing said resource-centric data such that for each resource, task and timing data for that resource, is collectively displayed in a one-to- many relationship relative to said resource.

In still another aspect of the present invention there is provided computer readable media containing program code, the program code being operative to instruct at least one programmable processor to execute a resource-based project management application which is arranged to access a data store associated with a project, and which is arranged to group each resource in that project all corresponding task, timing and dependency data in a resource-centric manner, so each resource is linked with its task, timing and dependency data in a one-to-many relationship, said application including or interfacing with

program code capable of graphically representing said resource-centric data such that for each resource, task, timing and dependency data for that resource, is collectively displayed in a one-to- many relationship relative to said resource.

In still another aspect of the present invention there is provided computer readable media containing program code, the program code being operative to instruct at least one programmable processor to execute a resource-based project management application which is arranged to access data stores associated with a plurality of specified projects, and which groups for each resource all corresponding task, timing and dependency data in a resource-centric manner, so each resource is linked with its task, timing and dependency data in a one-to-many relationship,

said application including or interfacing with

program code capable of graphically representing said resource-centric data such that for each resource, project, task, timing and dependency data for that resource across each project, is collectively displayed in a one-to-many relationship relative to said resource.

Brief description of the drawings

Figure 9 is a high level architecture diagram of an embodiment of the present invention;

Figure 10 is a sample data structure for a currently available Project Management System which is task-centric;

Figure 11a is a sample data structure employed by an embodiment of the present invention which is resource-centric;

Figure 11b is a sample data structure employed by an embodiment of the present invention which is resource centric, where resources are involved in multiple projects.

Figure 12a is a screen shot of the resources used in a typical project in an allocation screen in a currently available project Management System;

Figure 12b is a screen shot of a Gantt chart corresponding to the project shown in a typical project management system in Figure 14a.

Figure 13 is a screen shot of a reorganised resource-centric Gantt chart which is an embodiment of the present invention;

Figure 14 is a screen shot which shows that information associated with a specific task which appears a region of a chart of an embodiment of the present invention is selected and right-clicked by a mouse;

Figure 15 is a screen shot of an embodiment of the present invention prior to reallocation of a task;

Figure 16 is a screen shot of an embodiment of the present invention which shows reallocation of the task to another resource;

Figure 17 is a screen shot of an embodiment of the present invention which shows information on the reallocated task;

Figure 18 is a screen shot of an embodiment of the present invention which shows the reallocated task in an embodiment of the present invention;

Figure 19 shows a screen shot of project management software that reflects a resource which has been reallocated in accordance with an embodiment of the present invention; and

Figure 20 shows a screen shot of project management software that reflects a resource which has been reallocated in accordance with an embodiment of the present invention.

Detailed description of the embodiments

Figure 9 shows known project management software 150, in this case Microsoft Project®2003, which is able to communicate 152 with a relational data store 154 and which includes an Application Programming Interface (API) 156. The known project management software may include other similar implementations that are well known to a skilled addressee in the relevant art, such as Primavera. The relational data store 154 is in the form of an .mpp file. The data store 154 may alternatively be implemented as an SQL compliant database or may be an XML file.

A resource-based software application 160 interacts with the known project management software via a plug-in 162. This plug-in is able to retrieve information 163 from the known project management software 150 (and its associated data store 154) through the Application Programming Interface (API) 156 which is specific to that known software (in this case Microsoft Project 2003®) and create an instance of the currently active project data. Alternatively, the software application 160 may be implemented to interface directly 164 with the data store 154, however, this is significantly more cumbersome.

The software application 160 then reorganises the data of the specified instance into a resource orientated data store in a manner further described below. This resource oriented data store is passed to a third party Gantt charting software package 166 which may be an ActiveX® control such as such as VARCHART XGantt 3.1, accessible from www.netronic.com. to produce a modified Gantt chart. Various other packages may be used to produce a Gantt chart from the resource-centric data that is produced by the application 160.

The Gantt charting software 166 accesses the resource-centric data to produce a modified Gantt chart (Figures 13-18), with resources instead of events listed down the rows of the leftmost column, and the various dates and milestones indicated in the uppermost row of the chart, with bars indicating the duration of each task, and arrows indicating the dependencies associated with each task.

The resource-based software application of the present invention 160 may be integral with or separate from the known project management software, and may be

2004905709 01 Oct 2004

initialised from within an active session of a known project management software session, for example by activating an icon or by some other means well known in the art. Alternatively, the software of the present invention 160 may be initialised and operated as a separate program under any of the well known operating systems available, for example Windows® or Linux or variations on these. The software of the present invention may be written in any of the common object orientated languages including but not limited to C#, C++, and Java.

A high level representation of an hierarchical data structure 1002 for typical data captured in the data store for implementations of known project management software is shown in Figure 10. Each project has a number of fields associated with it (which may include days per week, working days per year and so on 1008). Each project is made up of a collection 1010 of tasks, for example 1012, 1014. A selection 1018 of typical data associated with a task is represented for task 1 and may include data such as Task_ID, Task_Name, and Start_date (as shown in Figure 5 at 112 in co-pending provisional Australian Application 2004900269). In relation to Figure 10 of the present application, each task may also include a collection of taskIDs on which it depends 1020, 1030 i.e. tasks which must be completed before that task may be commenced, for example for Task 1 this is Task001066, Task001254 (1022, 1024) .

Each task further includes a collection of resources 1040 allocated to that task. The resources may be positions, teams or people - in this example Regional GM, Robert Andrews, and Richard Randall (1042, 1044, 1046 respectively). In the case of Task 2, 1014 it can be seen that only Richard Randall 1046 is allocated.

Referring now to Figure 11a, a hierarchical data structure of the present invention is shown 1102. Each project in Figure11a has a number of fields associated with it 1108 (including Days per week, Working days per year and so on.) Each project is made up of a collection 1110 of resources, for example Richard Randall, Regional GM, and Richard Alcock (1112, 1114, 1116 respectively). Each resource is associated with a collection of tasks 1130. In the Example, Richard Randall is associated with tasks 1 and 3 (1131, 1132 respectively).

2004905709 01 Oct 2004

A selection of typical data associated with a task is represented for task 1, task 2 (1138, 1140). These data fields may include data such as Task_ID, Task_Name, Start_date (as shown in Figure 5 in co-pending provisional Australian Application 2004900269 at 112). Each task may also include a collection of taskIDs on which it depends 1160, 1170. For task 1 and task 2 respectively tasks which must be completed before that task may be commenced are for example 1162,1164 (Task001066, Task001254) and 1172, 1174 (Task 0012345, Task 0012687) respectively.

Similarly, a hierarchical data structure of the present invention is shown in 1182 of Figure 11b. This data structure may be produced in one aspect of the present invention where resources are involved in a plurality of projects, and task and timing information relating to those projects is captured by known project management software. As can be seen for resource 1112, Richard Randall is involved in Project 1 1185, in task 1 1131 and task 2 1132, which both have associated timing and other information, as well as dependencies information (as exemplified by Figure 11(a) but not shown in the present representation). Resource 1112, Richard Randall, is also involved in Project 2 1186 in task 200 1187, again having associated timing and other information (as exemplified by Figure 11(a) but not shown in the present representation).

It can be seen that an aspect of the present invention lies in the reorganisation of the data structure, from a task-centric perspective, with an associated collection of resources required to perform that task, to a resource-centric perspective, with each resource of the collection associated with one or more tasks required for the project. To this end, it can be seen from Figures 11(a) and 11(b) how all task, timing and dependency data associated with a particular resource are made a subset thereof.

Figure 12a shows the data used in the production of a typical Gantt chart using known project management software. A series of broad tasks 1212 and 1213 etc are listed in the task column. Each task may be divided into more detailed sub-tasks e.g. 1212.1 to 1212.5, and 1213.1. Each task may have duration 1214, start 1216 and end 1218 dates, dependencies indicating which task(s) must be completed before this task can commence 1220 and a resource (1222) associated with it. In the case of sub-task 1212.2 the resource allocated is Richard Randall 1230. Similarly, in the case of sub-task 1213.1 the allocated resource is Richard Randall and the Regional General Manager 1232.

2004905709 01 Oct 2004

Figure 12b shows the Gantt chart produced from this information using known project management software (for example Microsoft Project 2003®). Again a series of broad tasks 1212 and 1213 etc are listed in the task column. Each task may be divided into more detailed sub-tasks e.g. 1212.1 to 1212.5, and 1213.1. Each task may have duration 1214, start dates 1216,1220 and a resource 1222 associated with it. Also, the Gantt chart-type representation appears next to it, with resource names appearing next to events / milestones on the chart. It can be seen that Richard Randall is responsible for task 1212.2, which has certain dependencies (represented by arrows 1252) and other features in accordance with well known principles for representing the various stages of project management.

A simplified version of Gantt chart is set out at 10 in Figure 1 of co-pending provisional Australian Application 2004900269. A series of broad tasks 12 and 13 are listed in the leftmost task column, and various start and end dates 14 are listed along the uppermost timing row. The broad tasks 12 and 13 are divided up into more detailed sub-tasks 12.1 to 12.4 and 13.1 to 13.5, each one of which has an associated bar 12.1a, 12.2a which is indicative of how long the task is expected to take. The human resources that need to be applied to each task typically appear in a box alongside each bar, as is shown at 12.1b and 12.2b. Names of individuals allocated to tasks typically appear in a number of different boxes. Dependency links between task bars are indicated by arrows 24. A list of all those individuals involved in the project appears in a resource column 25 to the immediate right of the detailed task column.

Figure13 shows a screen shot 1300 of a modified Gantt chart in accordance with an aspect of the present invention which is produced from the information provided to Figure12a. It can be seen that the chart is organised according to resource (rather than task view as is the case in Figure14a). Each resource in the leftmost column e.g. Regional Coordinator, Regional General Manager, Richard Randal, Richard Randall, Rick Alcock, etc (1310, 1312, 1314, 1316, 1318 respectively) etc has an associated task or tasks with specific timeframes. For example, the Resource Richard Randall 1316 has task 1212.2 allocated to it, which is dependent on a number of other tasks, demonstrated by the arrows 1330, 1331. In turn, task FO is dependent on task 1415.2.

Figure14 shows a screen shot 1400 of an aspect of the present invention where the Task 1212.2 is active (for example selected and right clicked or some other well known mechanism). Information associated with that task is displayed on a 'popup' 1402, including Task ID, TaskName, Start and EndDates and Completion percentage (collectively 1404).

Figure 15 shows a shows a screen shot of one embodiment of the present invention 1500 demonstrating that the user has selected Task 1212.2 and wants to reallocate that activity to another resource. It can be seen that the dependencies associated with this task are represented by the 'greyed' out lines shown in 1510. The current start date and end date are shown to the user by a popup box 1514 when that task is selected (for example by clicking on it with a mouse).

Figure 16 shows a screen shot 1600 of one embodiment of the present invention showing the desired reallocation of task 1212.2 from resource Richard Randall (1316) to resource Rick Alcock (1318). It can be seen that this represented by 'greyed out' lines 1640, 1642 and the greyed out box 1644. At this point, the software program of the present invention can check that this does not breach certain rules associated with business logic. By way of non limiting example, this may include preventing the timeframe for carrying out task 1212.2 being altered to after the date of tasks which are dependent on it. (Another rule that could be included in the software is not to allow the reallocation of completed tasks).

Figure 17 shows an a screen shot 1700 in one aspect of the present invention where task details for task 1212.2 are presented to the user in a pop-up box 1704, confirming that the task has been reallocated from Richard Randall to Rick Alcock as is identified by 1706.

Figure 18 shows a screen shot 1800 of one aspect of the present invention which shows the re-allocation of task 1212.2 to another resource Rick Alcock, and the consequent adjustment of associated dependencies 1806.

When a user is satisfied with this allocation, this change may be saved to the instance of the data structure associated with the resource-centric project management software of the present invention in accordance with well known procedures in the art. In

2004905709 01 Oct 2004

turn, this change may be propagated back to the underlying data structure of the original active session of the known project management system in accordance with well known procedures in the art.

Accordingly, Figure 19 shows a screen shot 1900 of the Resource Planner view of a known project management software system which demonstrates that task 1212.2 has been allocated to Rick Alcock, a modification of the initial state shown in Figure11.

Figure 20 shows a modified resource allocation in the context of the overall project plan, task 1212.2 is allocated to Rick Alcock (This may be compared to the initial state shown in Figure 12).

It will be understood by a person skilled in the art that the method, software and system of the present invention could all be implemented in a manner such that the reorganisation and graphical presentation of the data set of known project management software (as described in the present invention) may take place on the same computer. However, it will also be appreciated by a person skilled in the art that alternative arrangements exist.

By way of non-limiting example, the reorganised data structure may be uploaded over a network from a project manager's computer, to a central repository or web server. This data structure may then be access and a graphical representation conveyed to a plurality of remote users communicating with the web server over a network such as the WAN, LAN internet or the like. Well known role based access control methods (for example using user Identification and password controls) may be used to control read, write, and modify access to the data of that data store.

Alternatively, a project data set may be communicated to the central repository where it may be reorganised from a task-centric data structure to a resource-centric data structure in accordance with an aspect of the present invention, and then made accessible to a plurality of remote users over a network.

For example, if the known project management software used is Microsoft Project 2003®, it is well known in the art for a project manager to publish task assignments to a Microsoft Enterprise server platform, for access by a remote team members over a wired or wireless network such as the internet, WAN, LAN or the like. Remote project team

member are able to interface and update the information published to the server platform by a Project Manager using the Project Web Access application.

It will be understood that the invention disclosed and defined herein extends to all alternative combinations of two or more of the individual features mentioned or evident from the text or drawings. All of these different combinations constitute various alternative aspects of the invention.

The foregoing describes embodiments of the present invention and modifications, obvious to those skilled in the art can be made thereto, without departing from the scope of the present invention.

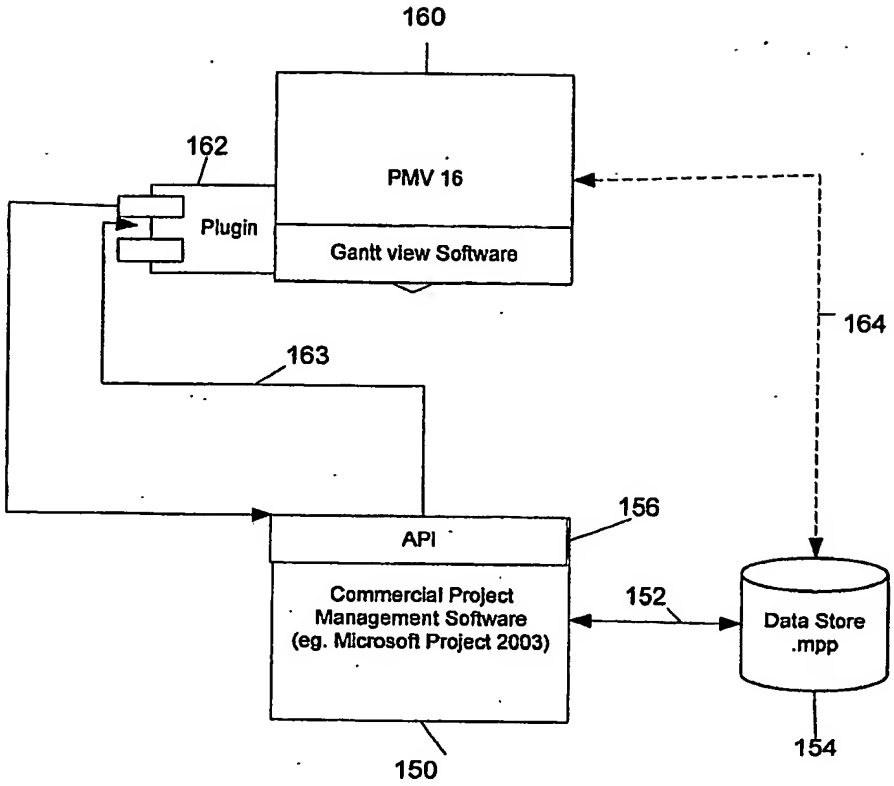

Figure 9

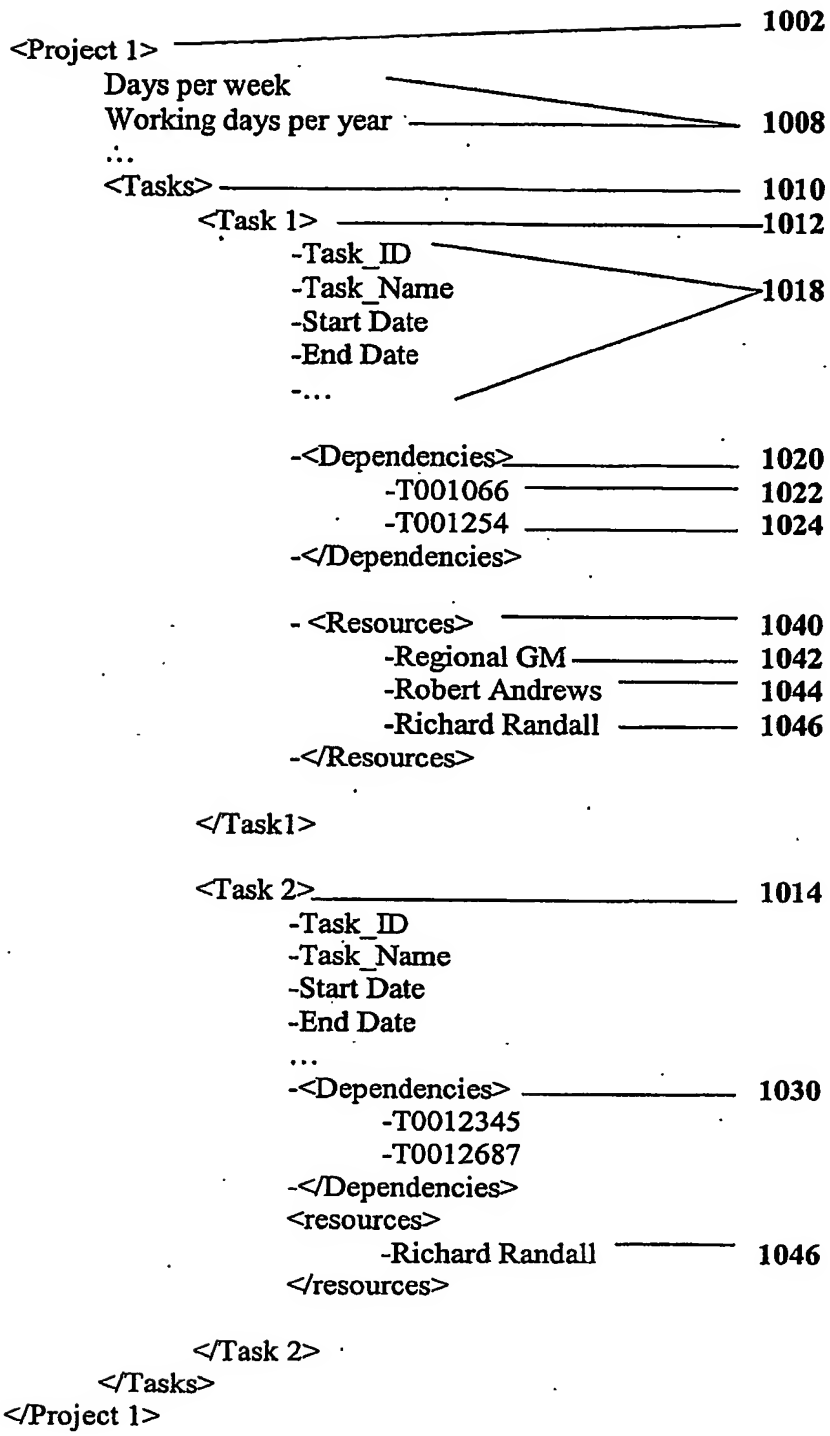

Fig 10

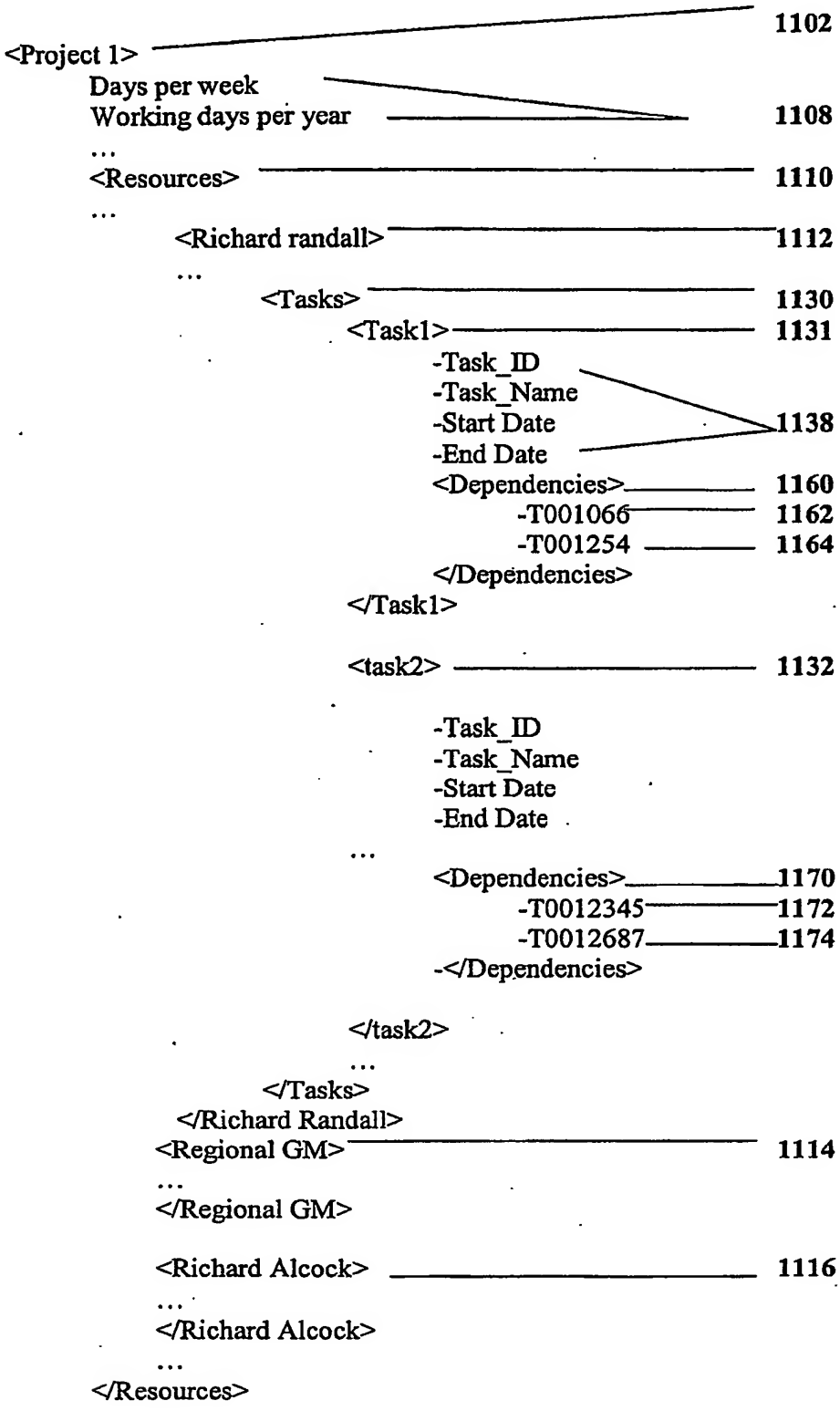

Fig 11a

```
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    <Richard Randall> ———————————— 1112
        <Project 1> ———————————————— 1185
            ..
            <Tasks>
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                        ...
                    </Dependencies>
                </Task1>
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                    <Dependencies>
                        ...
                    </Dependencies>
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                ...
            </Tasks>
        </Project 1>

        <Project 2> ———————————————— 1186
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                </Task200>

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    <Richard Randall>
    ...
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Fig 11b

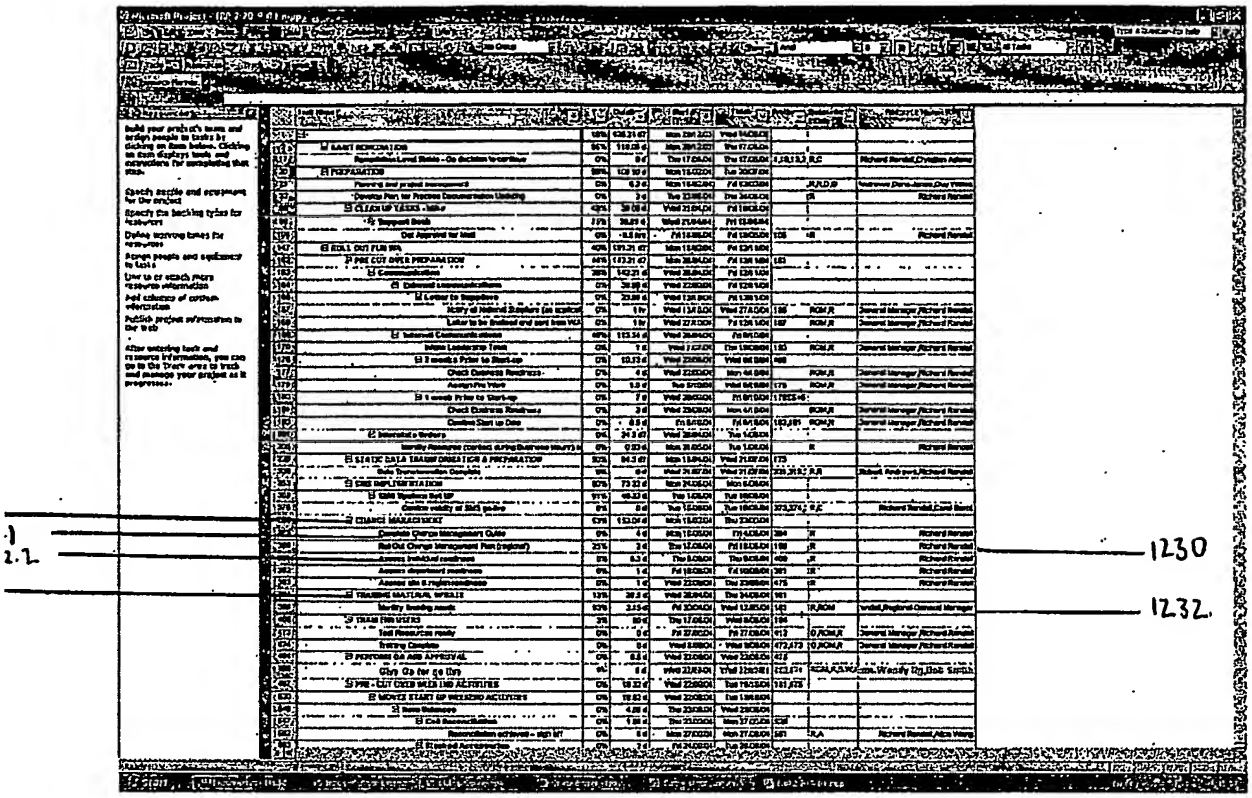

Figure 12a

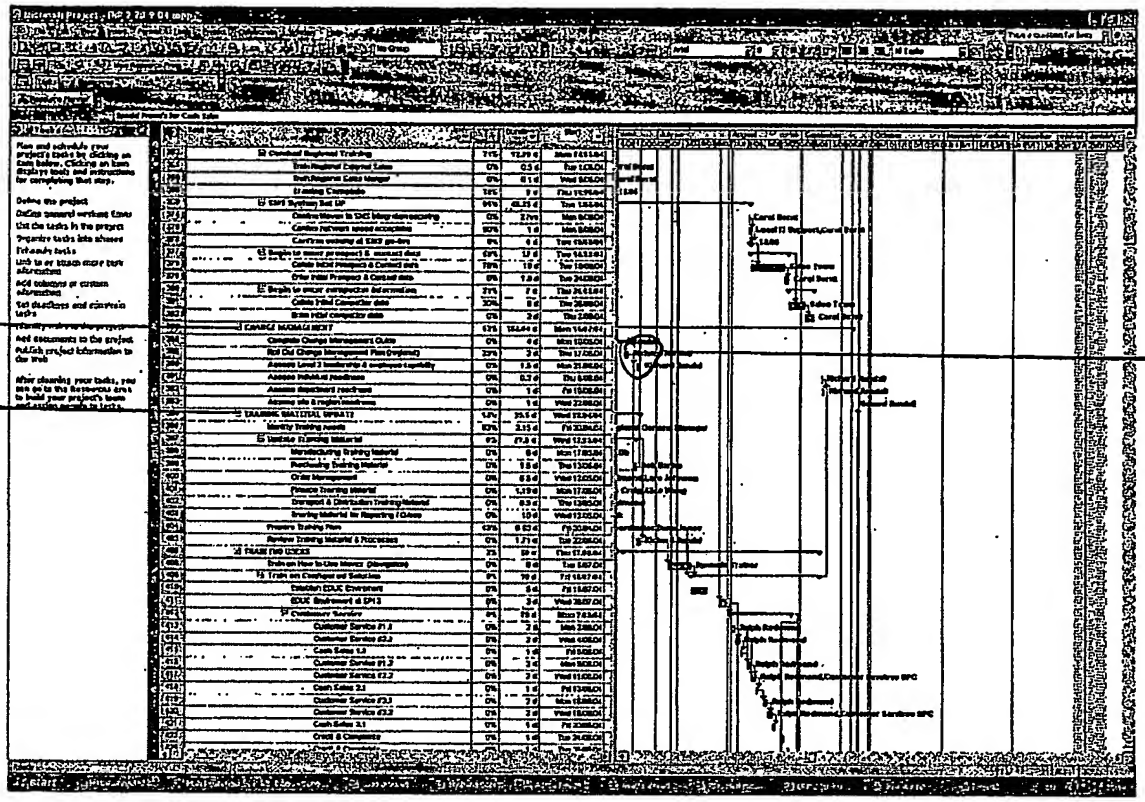

Figure 12b

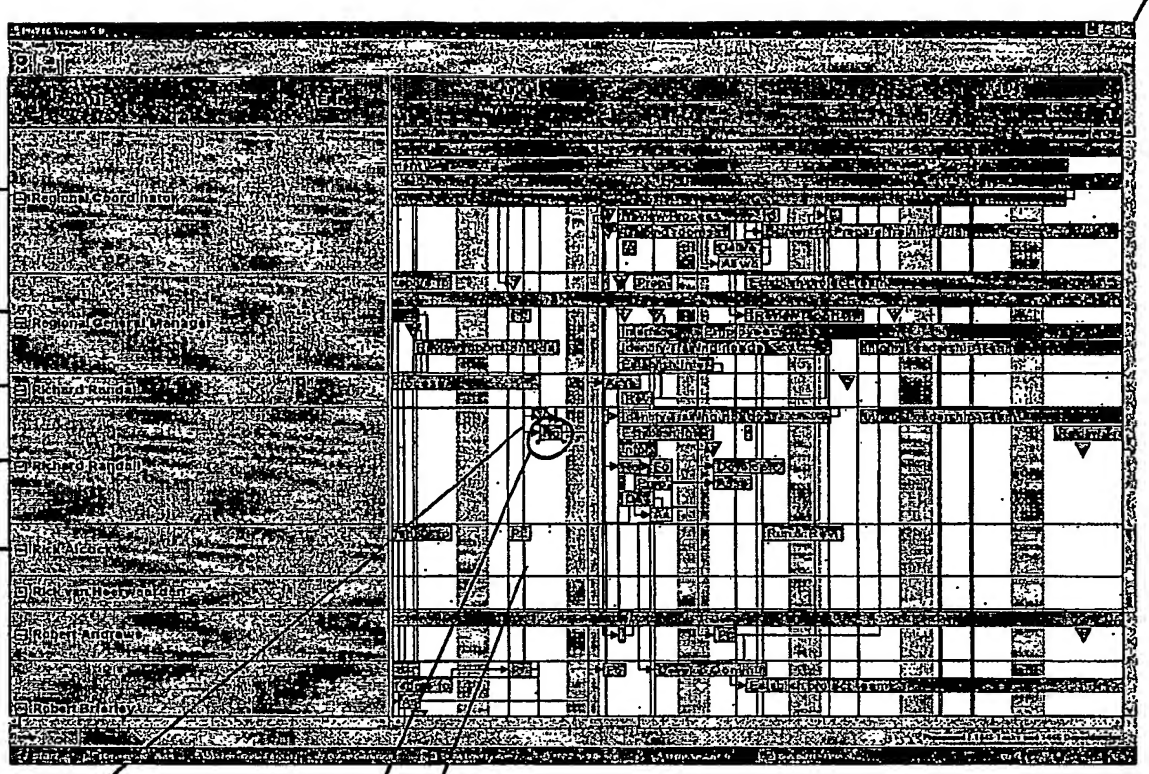

Figure 13

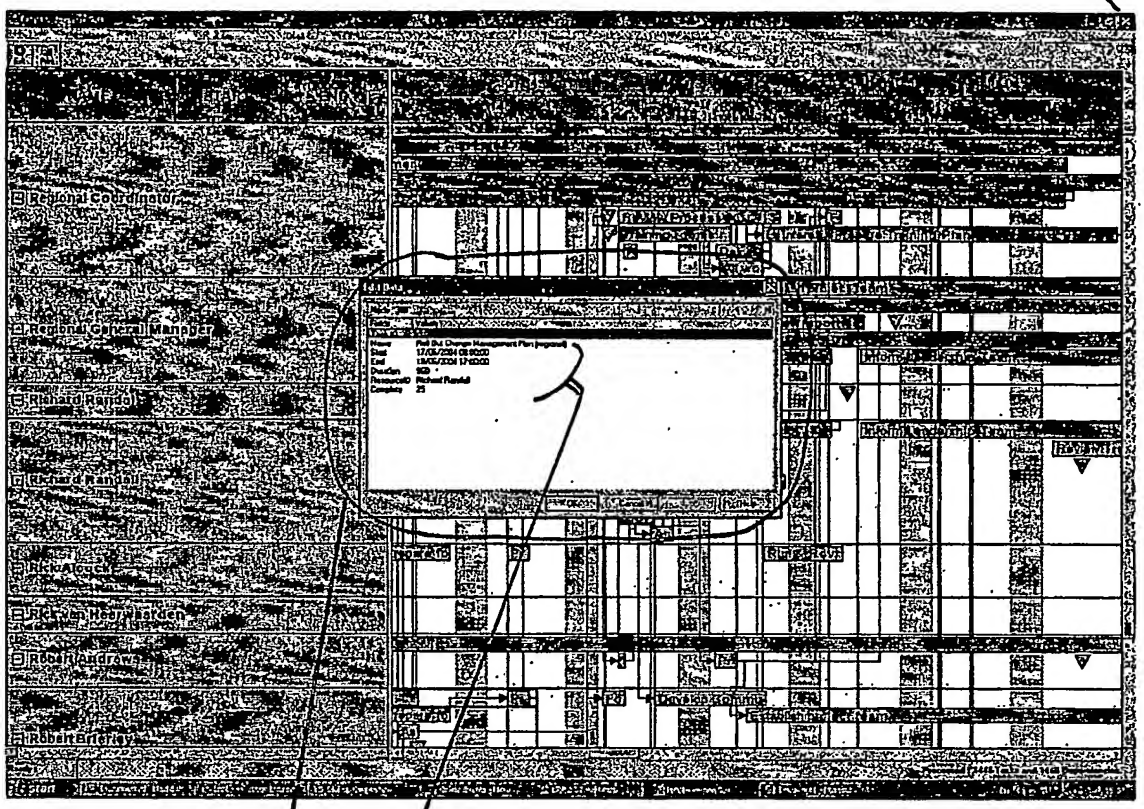

Figure 14

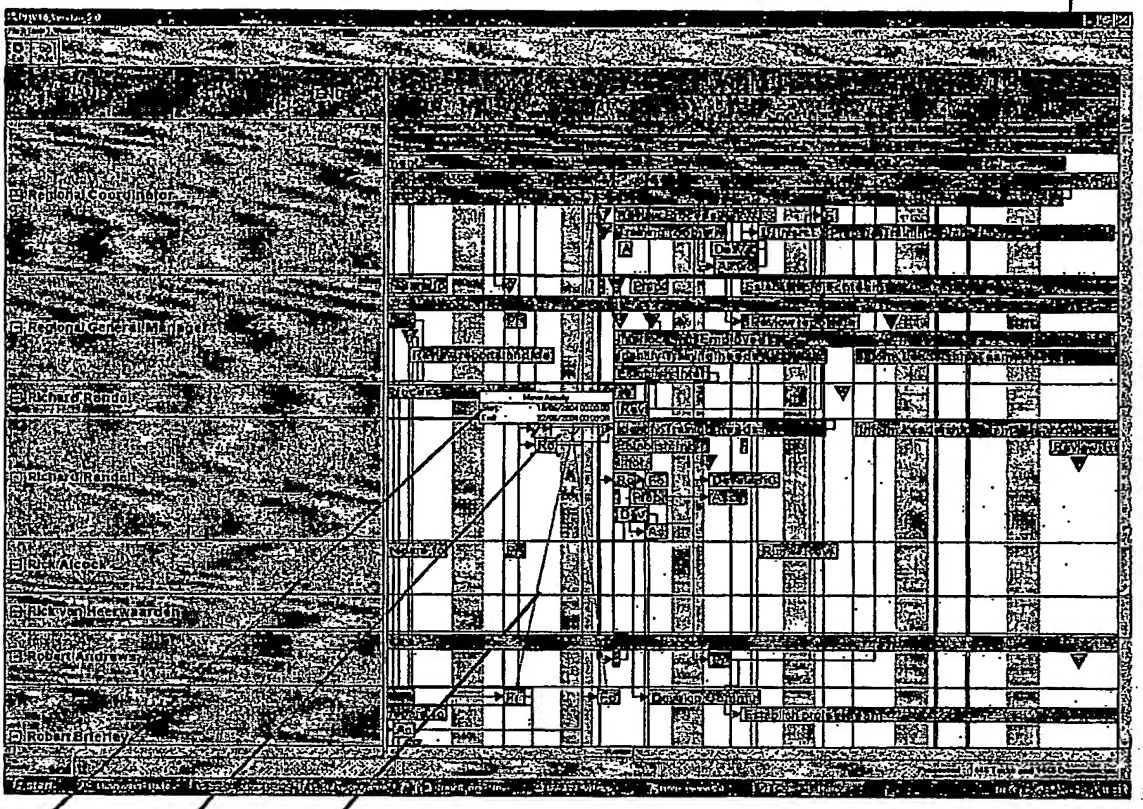

Figure 15

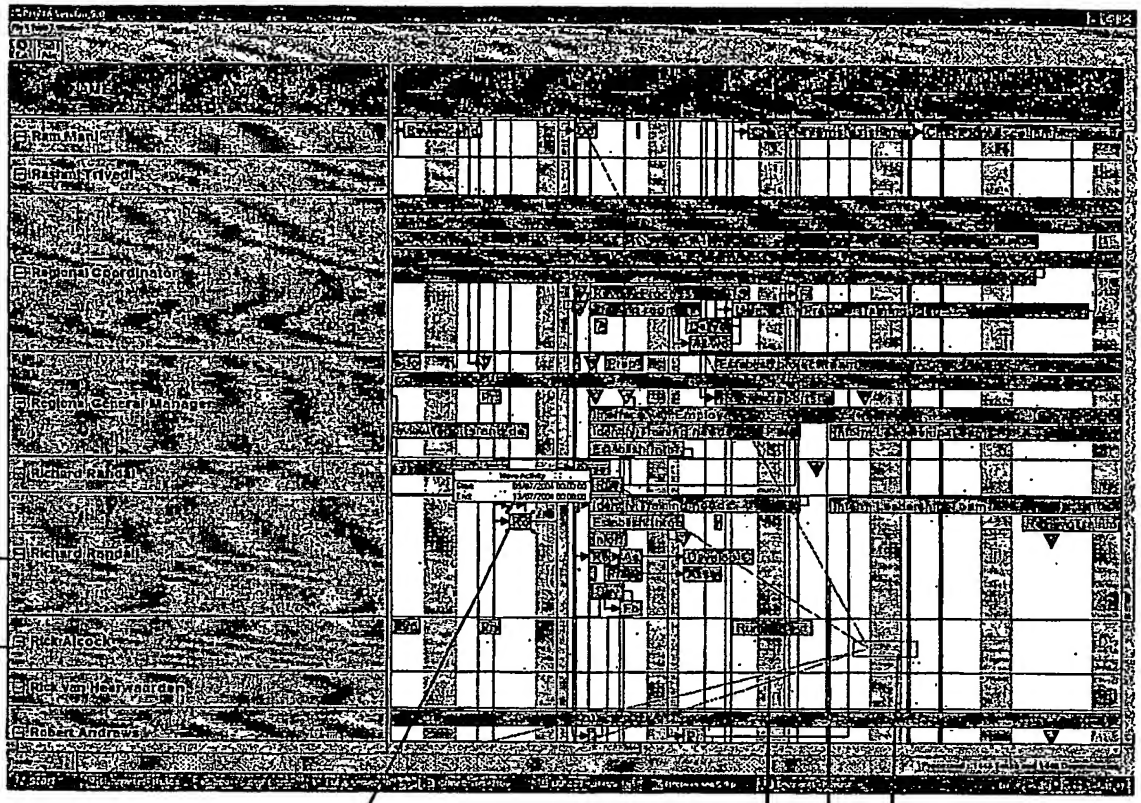

Figure 16

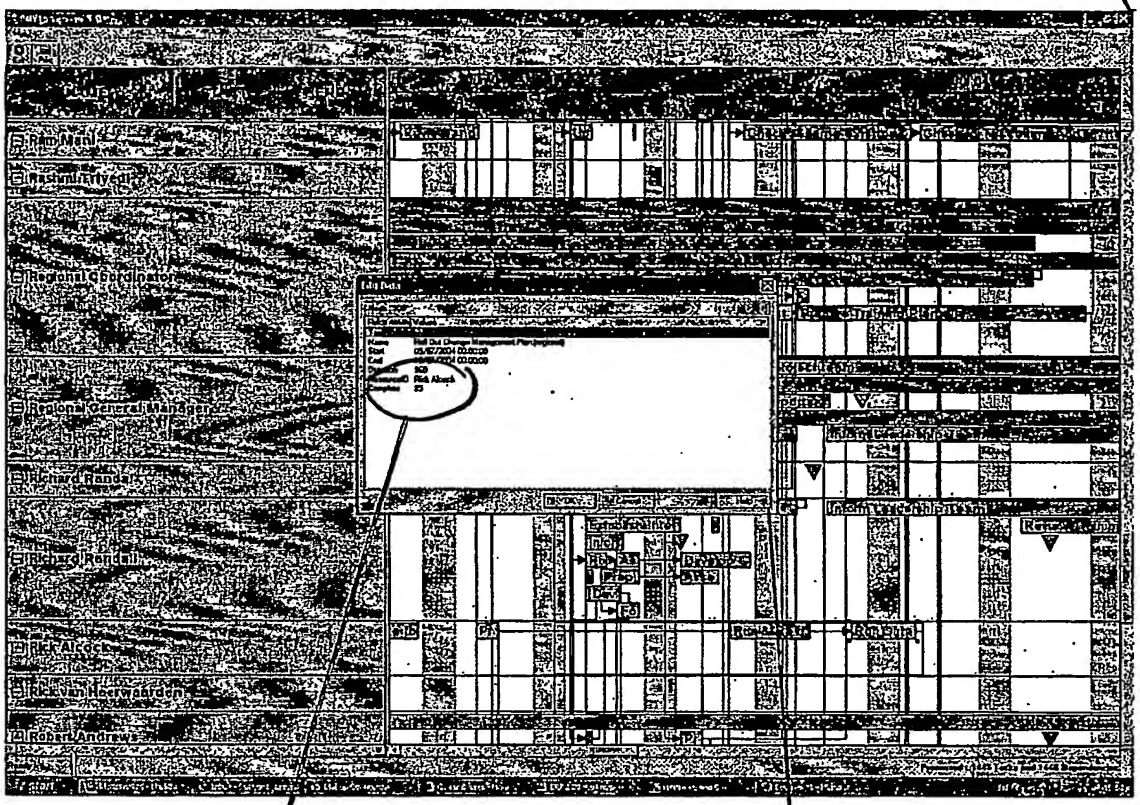

Figure 17

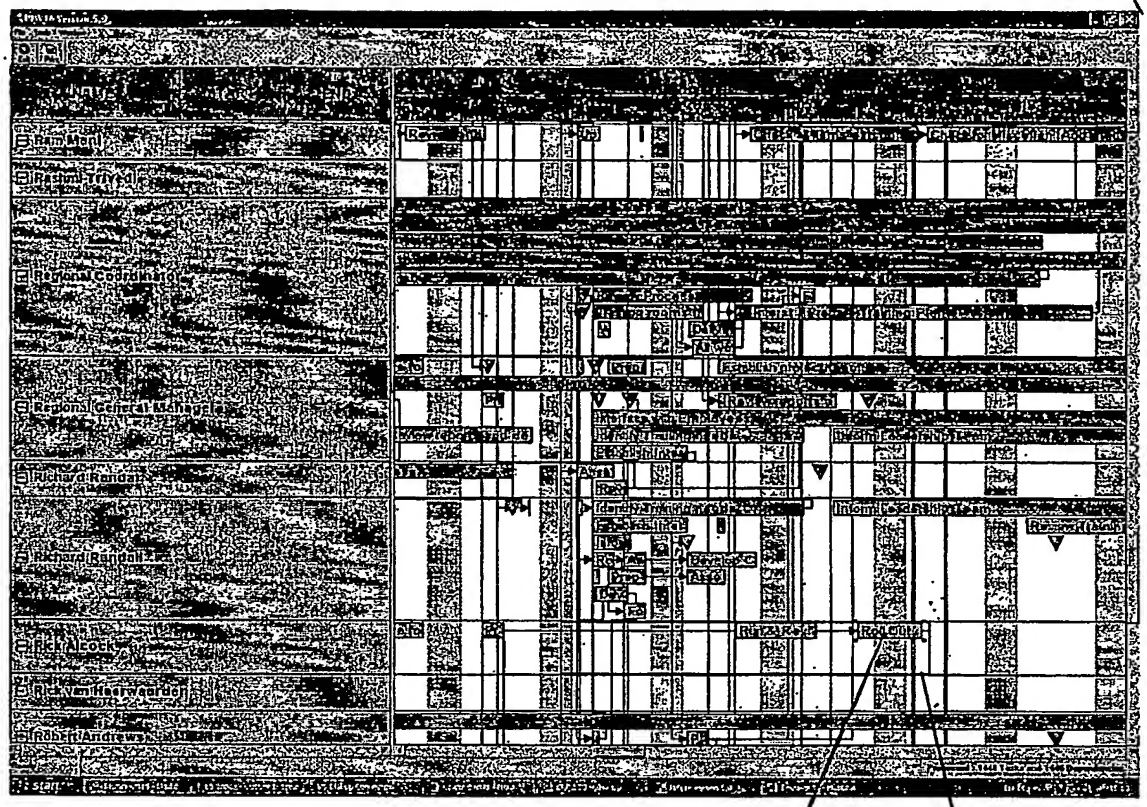

Figure 18

1900.

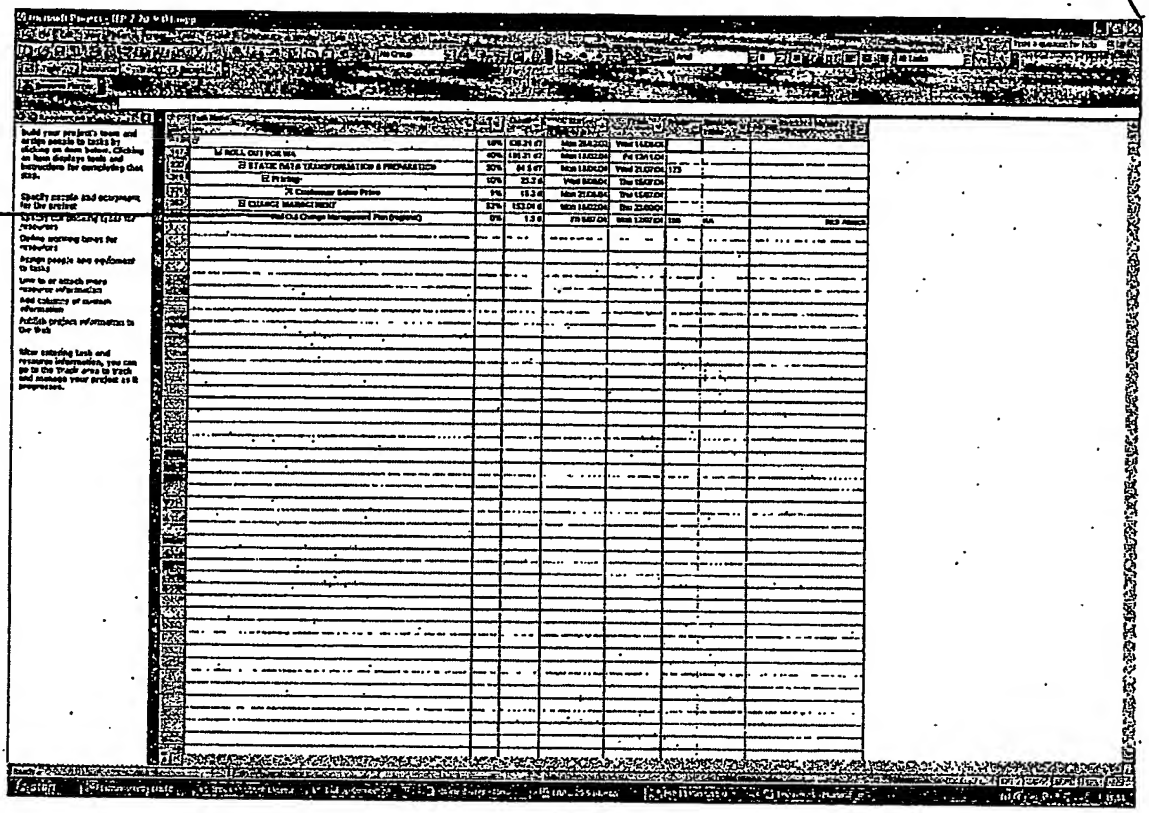

Figure 19

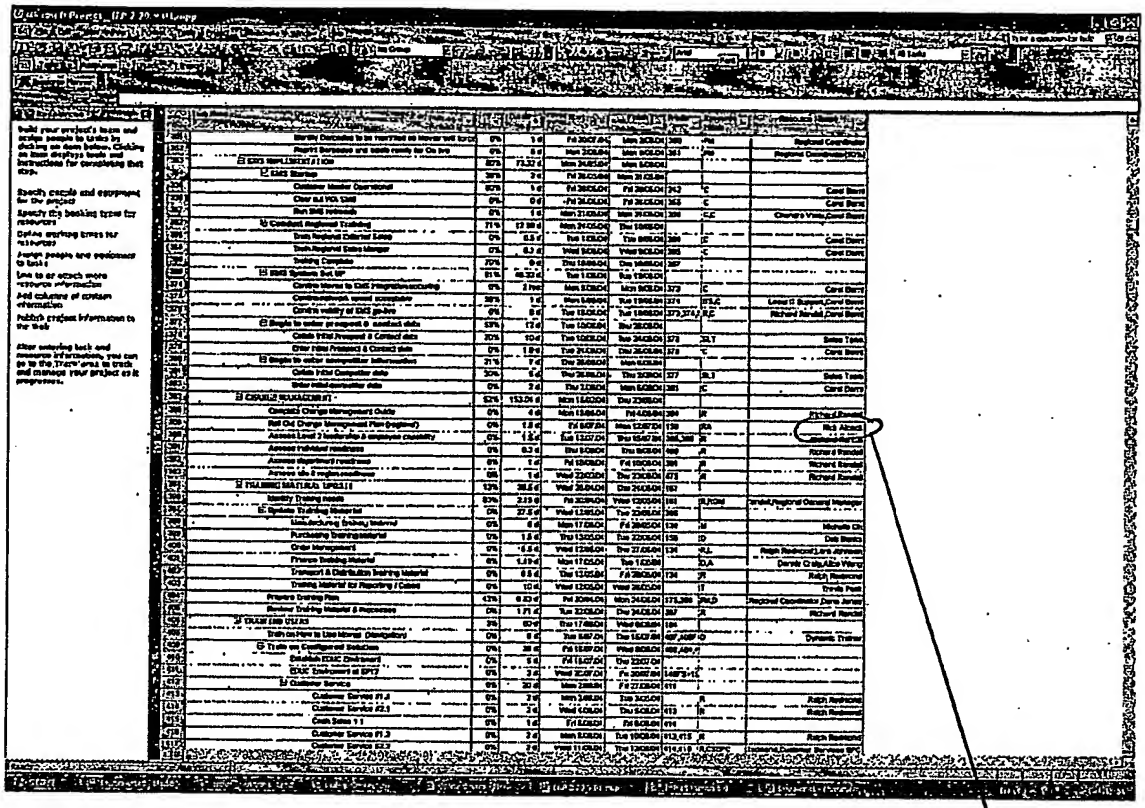

Figure 20

1212.2.

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